NITRIDE SEMICONDUCTOR DEVICE WITH REDUCED POLARIZATION FIELDS

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ABSTRACT

A method for fabricating a light-emitting semiconductor device including a III-Nitride quantum well layer includes selecting a facet orientation of the quantum well layer to control a field strength of a piezoelectric field and/or a field strength of a spontaneous electric field in the quantum well layer, and growing the quantum well layer with the selected facet orientation. The facet orientation may be selected to reduce the magnitude of a piezoelectric field and/or the magnitude of a spontaneous electric field, for example. The facet orientation may also be selected to control or reduce the magnitude of the combined piezoelectric and spontaneous electric field strength. As a result of the reduced magnitude of piezoelectric, spontaneous, or combined piezoelectric and spontaneous electric field strengths in their quantum well layers, light-emitting devices in accordance with the present invention may generate light with increased efficiency compared to prior art devices.